

**APPARATUS AND METHODS FOR MANUFACTURING OPERATIONS USING
NON-CONTACT POSITION SENSING**

ABSTRACT OF THE DISCLOSURE

5 Apparatus and methods for manufacturing operations using non-contact position sensing are disclosed. In one embodiment, an apparatus includes a track assembly adapted to be attached to a workpiece, a carriage assembly moveably coupled to the track assembly and moveable relative to the workpiece, and a position sensor. The position sensor includes a sensor element adapted to detect at least one edge of an index feature on the workpiece from
10 a distance away from the index feature. In an alternate embodiment, the position sensor may include a sensing circuit that receives an analog signal from the sensing element and provides both analog and digital output signals. In another embodiment, a controller that controls manufacturing operations may be mounted directly on the carriage assembly.



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